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Table 1. Unit Cost Summary

Technology/Construction Task Element	Cost	Unit Type
<b>Direct Construction Costs</b>		
Mobilization and Demobilization (1)	15%	%
Debris Removal & Disposal	\$11,630	ACRE
Pile Removal & Disposal	\$635	PILE
Pile Replacement	\$6,636	PILE
Temporary Dock Relocation	\$89,173	DOCK
Dredging & Transport to Offloading Facility		
Water Quality Control Structures		
Purchase, Install and Maintain Silt Curtains	\$86	LF
Purchase, Install and Remove Sheet Pile Walls	\$2,440	LF
Dredging		
Open water	\$33.80	CY
Confined or shallow water	\$47.70	CY
Dredging from shore	\$41.60	CY
Residual Dredging	\$79.60	CY
Miscellaneous		
Stabilization	\$31.30	CY
Barge Transportation	\$126.00	MILE
Hydraulically Offloading	\$5.60	CY
Capping		
Material Purchase and Deliver		
Base Cap - Sand	\$14.60	TON
Armor A material	\$18.00	TON
Armor B material	\$18.00	TON
Armor C material	\$18.00	TON
Armor D material	\$18.00	TON
Armor ODOT 100 material	\$31.50	TON
Armor ODOT 200 material	\$31.50	TON
Cap Material Placement		
Open Water Placement		
Base Cap - Open Water	\$17.60	TON
Armor - Open Water	\$15.50	TON
Organoclay Mat - Open Water (Purchase and Place)	\$6.30	SF
EMNR Layer - Open Water	\$22.00	TON
Residuals Cap - Open Water	\$22.00	TON
Backfill - Open Water	\$17.60	TON
Confined or Under Pier Placement		
Base Cap	\$36.20	TON
Armor	\$32.00	TON
Organoclay Mat (Purchase and Place)	\$21.10	SF
EMNR Layer	\$45.30	TON
Residuals Cap	\$45.30	TON
Backfill	\$36.20	TON
In Situ Treatment		
In Situ Treatment - Open Water	\$4.50	SF
In Situ Treatment - Confined/Underpier	\$5.80	SF
DSL Land Purchase	\$142,877	ACRE
Mitigation (2)		
On site	\$2,260,000	ACRE
Off site	\$350,000	ACRE
Disposal		
Upland Subtitle D	\$79	TON
Upland Subtitle C	\$226	TON
In-Water CDF	\$87	CY
<b>Total Direct Construction Costs (3)</b>		
<b>Indirect Construction Costs</b>		
Design	15%	%
Daily Responsible Party oversight and project management	\$292,000	MONTHLY
Daily Agency Oversight and project management and Project Management including Environmental Monitoring	\$100,000	MONTHLY
Engineering Support During Construction	\$78,000	MONTHLY
Special Insurance, Bonding	5%	%
<b>Total Indirect Construction Cost (4)</b>		
<b>Total Capital Costs (5)</b>		
<b>Contingency (6)</b>	40%	%
<b>Long Term Monitoring and Maintenance (7)</b>		
<b>ENGINEER'S OPINION OF PROBABLE COST(8)</b>		

**Notes:**

General: With the exception of Long term Monitoring and Maintenance, sub-SMA Costs are presented for all Construction tasks included in this table.

- (1) Mobilization and Demobilizations costs are a percentage of the Total Direct Construction Costs
- (2) Mitigation Costs were determined on a SMA basis for each alternative. These costs were extrapolated to the sub-SMA level. Caution should be exercised interpreting these costs on a sub-SMA level.
- (3) The Total Direct Construction Cost is defined as the sum of the Direct Construction Tasks listed above.
- (4) The Total Indirect Construction Cost is defined as the sum of the Indirect Construction tasks listed above.
- (5) The Total Capital Cost is the Sum of The Total Direct and Indirect Construction Costs
- (6) The Contingency is defined as a percent of the Total Direct Construction Costs.
- (7) Due to the nature of Long Term Monitoring activities, the Long Term Monitoring and Maintenance costs are calculated on an alternative wide basis. The costs are presented on an alternative and SMA basis for each alternative. Caution should be exercised interpreting these numbers on a SMA basis. Due to the relative size of Long term monitoring events, and the size of sub-SMAs, these costs are not extrapolated to the sub-SMA level. Refer to table 1 for Long Term Monitoring and Maintenance Costs.
- (8) The Engineer's Opinion of Probable Cost is calculated for each sub-SMA, SMA, and Alternative. The sub-SMA level cost estimates presented in the Cost Tools Spreadsheet do not include modifications for a Net Present Value Analysis, or Long Term Monitoring and Maintenance Costs. Caution should be used interpreting sub-SMA level Cost Estimates.

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Table 6. Temporary Sheetpile Walls

ESTIMATE WORKSHEET 5.2																	
											Temp. Sheet Pile Walls						
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.						
											5.2						
						PRODUCTION DATA											
TOTAL QUANTITY ON PROPOSAL		14 LF		3 pairs per day		HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE						
QUANTITY				Assume sheets 80'		10	1	6	14		1						
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL						
WORKSHEET 5.2		\$4,800.00		\$1,756.51			\$5,130.00		\$14,675.28		\$26,362						
											\$0						
											\$0						
											\$0						
GRAND TOTALS		\$4,800.00		\$1,756.51		\$0.00	\$5,130.00		\$14,675.28		\$26,362						
UNIT PRICES		\$355.56		\$130.11		\$0.00	\$380.00		\$1,087.06								
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	TOTAL COST			UNIT PRICE		\$1,953							
Purchase and deliver steel sheets			14	\$1,082	\$14,601			UNIT OF MEASURE		LF							
Remove sheet pile wall			14	\$433	\$5,843			OH&P 25%		\$2,440							
Salvage Cost			14	-\$427	-\$5,769												
				\$0													
				\$0													
				\$0													
BARE UNIT COST		\$1,087.06		TOTAL COST		\$14,675.28											
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST					
Laborer		8	10	\$37.00	\$2,960.00			0		0	\$0.00	\$0.00					
Operator		4	10	\$46.00	\$1,840.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00					
17% OT			0		\$0.00			0		0	\$0.00	\$0.00					
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$4,800.00		BARE UNIT COS		\$0.00		TOTAL SES COST		\$0.00			
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST					
Fuel / Oil / Grease		345	\$ 4.00	GAL	\$1,380.00	150 Ton Crane		120	1	10	\$111.00	\$1,110.00					
Equipment Repairs 7%					\$152.60	Barge 200x50		0	1	10	\$107.00	\$1,070.00					
PPE		12	\$15.00		\$93.80	Tender 200 HP		20	1	10	\$16.00	\$160.00					
					\$0.00	Tug 800 HP		150	1	10	\$60.00	\$600.00					
					\$0.00	ICE Vibratory		15	1	10	\$22.00	\$220.00					
					\$0.00	Air compressor		20	1	10	\$47.00	\$470.00					
					\$0.00	Welder/ Torch		20	1	10	\$5.00	\$50.00					
					\$0.00	Material Barge		0	1	10	\$107.00	\$1,070.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
					\$0.00			0		0	\$0.00	\$0.00					
TAX AT 8%					\$130.11	TAX AT 8%		0		0	\$0.00	\$380.00					
BARE UNIT COST		\$130.11		TOTAL MATERIAL COST		\$1,756.51		BARE UNIT COS		\$380.00		345		TOTAL RENTED EQUIP		\$5,130.00	

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Table 7. Silt Curtain Installation

ESTIMATE WORKSHEET 5.1													
SILT CURTAIN INSTALLATION													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
											5.1		
PRODUCTION DATA													
TOTAL QUANTITY ON PROPOSAL	750 LF					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
						10	1	6	750	1			
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL	TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT	TOTAL SUB-CONTRACTOR	TOTAL						
WORKSHEET 5.1		\$2,808.00	\$44,788.90		\$1,252.80	\$2,800.00	\$51,649.70						
							\$0.00						
							\$0.00						
							\$0.00						
GRAND TOTALS		\$2,808.00	\$44,788.90	\$0.00	\$1,252.80	\$2,800.00	\$51,649.70						
UNIT PRICES		\$3.74	\$59.72	\$0.00	\$1.67	\$3.73							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	TOTAL COST			UNIT PRICE						
IWT Delivery		1	\$2,800.00	\$2,800.00			\$68.87						
				\$0.00			UNIT OF MEASURE						
				\$0.00			LF						
				\$0.00			OH&P 25%						
				\$0.00			\$86						
				\$0.00									
				\$0.00									
BARE UNIT COST	\$0.00	TOTAL COST	\$2,800.00										
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Laborer		4	10	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00	
Operator		2	10	\$46.00	\$920.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT			0		\$408.00			0		0	\$0.00	\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$2,808.00					BARE UNIT COS	\$0.00	0	TOTAL SES COST	\$0.00	
MATERIAL / SERVICES	QUANTITY UNITS	UNIT COST	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST			
FOG	GAL	45	\$4.00	\$180.00	Work Boat	15	2	10	\$56.00	\$1,120.00			
Equipment Repair	7%	1	\$81.20	\$81.20	Forklift	30	1	2.5	\$16.00	\$40.00			
PPE		6	\$15.00	\$90.00		0		0	\$0.00	\$0.00			
Turbidity Curtains		800	\$51.40	\$41,120.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
			\$0.00	\$0.00		0		0	\$0.00	\$0.00			
TAX AT 8%			\$3,317.70	TAX AT 8%		0		0	\$0.00	\$92.80			
BARE UNIT COST	\$59.72	TOTAL MATERIAL COST	\$44,788.90					BARE UNIT COS	\$1.67	45	TOTAL RENTED EQUIP	\$1,252.80	

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